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LIST OF PRIOR ART CITED BY APPLICANT

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APPLICANT

Donald R. Huffman, et al

FILING DATE

September 10, 1990

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U.S. PATENT DOCUMENTS

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501C	AA	4 1 3 2 6 7 1	1/2/79	Deininger et al.	252	445	
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

501C	AR	Williams, Close packing of spheres, J. Chem. Phys. 87(7), October 1, 1987 pages 4206-4211
	AS	Rodzinski, et al. C₆₀ (g) AND C₇₀ (g): A COMPUTATIONAL STUDY OF THE PRESSURE AND TEMPERATURE DEPENDENCE OF THEIR POPULATIONS, Carbon Vol. 25, No. 6, pp. 747-750 1987
501C	AT	Larsson, et al., OPTICAL SPECTRUM OF THE ICOSAHEDRAL C ₆₀ "FULLENE-60", Chemical Physical Letters, Volume 137, number 6, July 3, 1987, pp. 501-503

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H. H. H. H. H.

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	AN							
	AO							
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

56-K	AR	Kovacevic, et al. On the Hybridization in Some Archimedean Carbon Clusters, International Journal of Quantum Chemistry Symposium 21, (1987) pp. 589-593
	AS	Rosen, et al., Optical Spectrum of the Icosahedral C ₆₀ -"Bollene-60": A Challenge for Laser Spectroscopy, Laser Spectroscopy VIII, Proceedings of the Eighth International Conference, June, 1987, pp. 250-253
56-I	AT	

EXAMINER

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

56-1	AR	Elser, et al., Magnetic behavior of icosahedral C ₆₀ , Physical Review A General Physics Third Series, Volume 36, Number 10, November 15, 1987, pp. 4579-4585
56-1	AS	Fowler, et al., The Leapfrog Principle: A Rule for Electron Counts of Carbon Clusters, J. Chem. Soc., Chem. Commun., 1987 pp. 1403-1405
56-1	AT	Almlof, et al., Theoretical Methods and Results for Electronic Structure Calculations on Very Large Systems Carbon Clusters, ACS Symposium Series 353, 1987, pp. 35-48

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	AO							
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

50K	AR	Schulman, et al., Symmetrical Clusters of Carbon Atoms: The C ₂₄ and C ₆₀ Molecules, Chemical Physics Letters, Volume 141, number 1,2, October 30, 1987 pp. 45-48
50K	AS	Wales, Closed-Shell Structures and the Building Game, Chemical Physics Letters, Volume 141, number 6, November 27, 1987, pp. 478-484
50K	AT	McKee, et al., Calculated Properties of C ₆₀ Isomers and Fragments, Journal of Molecular Structure (Theochem.), 153 (1987) pp. 75-84

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DATE CONSIDERED

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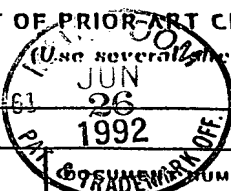
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501C	AR	Randic, et al., On the Aromatic Stability of a Conjugated C ₆₀ Cluster, Croatica Chemical
		ACTA 60 (4) 1987 pp. 595-604
501C	AS	Bochvar, et al., Problems in the Structural Chemistry of Crystalline Carbon, Sov. Sci. Rev.
		B. Chem., Vo. 9, 1987, pp. 483-527
501C	AT	Schmalz, et al., Elemental Carbon Cages, J. Am. Chem. Soc. 1988, 110, pp. 1113-1127

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H. Schubert

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

SG-K	AR	O'Brien, et al., Photophysics of buckminsterfullerene and other carbon cluster ions, J. Chem. Phys. 88(1), January 1, 1988, pp. 220-230
SG-K	AS	Rudzinski, et al., Computational Study of Relative Stabilities of C ₆₀ (I _h) and C ₇₀ (D _{5h}) Gas- Phase Clusters, Thermochimica Acta, 125 (1988) pp. 155-162
SG-K	AT	Fowler, et al., Systematics of Bonding in non-icosahedral carbon clusters, Theor Chim Acta (1988) 73: pp. 1-26

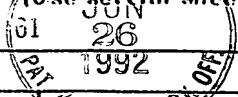
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

S&K	AR	Negri, et al., Quantum-Chemical Investigation of Franck-Condon and Jahn-Teller Activity in the Electronic Spectra of Buckminsterfullerene, Chemical Physics Letters, Vol. 144, No. 1, February 12, 1988, pp. 31-36
	AS	
S&K	AT	Leger, et al., Remarkable candidates for the carrier for the diffuse interstellar bands: C ₆₀ ⁺ and other polyhedral carbon ions, Astron. Astrophys., 203, (1988) pp. 145-148

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S. H. Melnick

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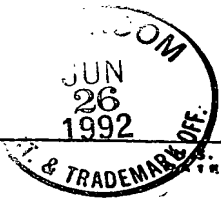
56-10	AR	Aihara, et al., Spherical Aromaticity of Buckminsterfullerene, Bull. Chem. Soc. Jpn. 61, (1988) pp. 2657-2659
56-10	AS	Stanton, et al., Normal Vibrational Modes of Buckminsterfullerene, J. Phys. Chem., 1988, 92, pp. 2141-2145
56-10	AT	Balasubramanian, et al., Computer Generation of Spectra of Graphs: Applications to C ₆₀ Clusters and Other Systems, Journal of Computational Chemistry, Vol. 9, No. 4, (1988) pp. 406-415

EXAMINER

DATE CONSIDERED

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Sheet 9 of 56

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Donald R. Huffman, et al.

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

5615	AR	Wu, et al., Vibrational Motions of Buckminsterfullerene, Chemical Physical Letters, Volume 137, number 3, June 12, 1987 pp. 291-294
5615	AS	Slanina, et al., C ₆₀ (g), C ₇₀ (g), Saturated Carbon Vapour and Increase of Cluster Populations with Temperature: A Combined Anal Quantum-Chemical and Statistical-Mechanical Study,
	AT	Collection Czechoslovak Chem. Commun. Volume 52, (1987) pp. 2831-2839

EXAMINER

Shelvikoff

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

56-11	AR		Shibuya, et al., Two Icosahedral Structures for the C ₆₀ Cluster, Chemical Physics Letters, Volume 137, Number 1, May 29, 1987, pp. 13-16
56-11	AS		Brown, High Symmetries in Quantum Chemistry, Chemical Physics Letters, Volume 136, Number 2, May 1, 1987, pp. 128-133
56-11	AT		Luthi, et al., Ab Initio Studies on the Thermodynamic Stability of the Icosahedral C ₆₀ Molecule "Buckminsterfullerene", Chemical Physics Letters, Vol. 135, Number 4,5, April 10, 1987 pp. 357-360

EXAMINER

DATE CONSIDERED

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

56K	AR	Scott, et al., Benzene Ring Contractions at High Temperatures, Evidence from the Thermal Interconversions of Aceanthrylene, Acephenanthrylene, and Fluoranthene, J. Am. Chem. Soc.
	AS	1987, 109, pp. 5461-5465
56K	AT	Hayden, et al., π bonding in the icosahedral C_{60} cluster, Physical Review B, Volume 36, Number 9, September 15, 1987, pp. 5010-5015

EXAMINER

Shelton

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

50-1	AR		Laszlo, et al., On the Geometrical Structure and UV Spectrum of the Truncated Icosahedral C ₆₀ Molecule, Chemical Physics Letters, Volume 136, number 5, May 15, 1987, pp. 418-422
50-1	AS		Elser, et al., Icosahedral C ₆₀ : an aromatic molecule with a vanishingly small ring current magnetic susceptibility, Nature Vol. 325, February 26, 1987, pp. 792-794
	AT		Coulombeau, et al., Calculs de Proprietes Electroniques et des Frequences Normales de Vibration D'Agregats Carbones Formant Des Polyedres Reguliers et Semi-Reguliers, Journal de chimie physique, 1987, 84, n° 7-8

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50-1C	AR	Fowler, How Unusual is C ₆₀ ? Magic Numbers for Carbon Clusters, Chemical Physics Letters, Volume 131, number 6, November 21, 1986, pp. 444-450
50-1K	AS	Harter, et al., Rovibrational Spectral Fine Structure of Icosahedral Molecules, Chemical Physics Letters, Volume 132, number 4,5, December 19, 1986, pp. 387-392
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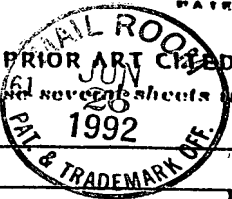
56-K	AR	Marynick, et al., Localized Molecular Orbitals and Electronic Structure of Buckminsterfullerene, Chemical Physics Letters, Volume 132, number 4,5, pp. 383-386 (1986)
56-1C	AS	Kataoka, et al., Geometrical Structures and Spectra of Corannulene, and Icosahedral C ₆₀ Tetrahedron, Vol. 42, No. 23, pp. 6437-6442 (1986)
56-1C	AT	Haddon, et al., Rehybridization and π -Orbital Alignment: The Key to the Existence of Spheroidal Carbon Clusters, Chemical Physics Letters, Volume 131, number 3, pp. 165-169 (1986)

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

561C	AR		Hess, Jr., et al., The Stability of Footballene, J. Org. Chem, 1986, pp. 3902-3903
	AS		Rosen, et al., Electronic structure of spherical metal containing carbon shells: study of the LaC ₆₀ and C ₆₀ clusters and their ions within the local density approximation,
	AT		Z. Phys. D-Atoms, Molecules and Clusters, pp. 387-390, 1989

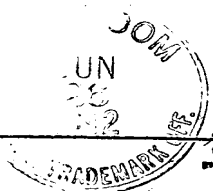
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56-1C	AR	Harter, et al., Rotation-vibration spectra of icosahedral molecules. I. Icosahedral symmetry analysis and fine structure, J. Chem. Phys. 90(9), May 1989, pp. 4727-4743
	AS	Weeks, et al., Rotation-vibration spectra of icosahedral molecules. II. Icosahedral symmetry, vibrational eigenfrequencies, and normal modes of buckminsterfullerene, J. Chem. Phys. 90(9), May 1989 pp. 4744-4771
	AT	

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FORM PTO-1449 (REV. 7-90)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTY. DOCKET NO. 7913Z		SERIAL NO. 580,246		Sheet 17 of 56	
LIST OF PRIOR ART CITED BY APPLICANT (Use several sheets if necessary)				APPLICANT Donald R. Huffman, et al.				FILING DATE September 10, 1990	
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)									
56-11	AR	Dias, A Facile Huckel Molecular Orbital Solution of Buckminsterfullene Using Chemical Graph Theory, Journal of Chemical Education, Vol. 66, No. 12, December 1989 pp. 1012-1015							
	AS	Brendschol, et al., Kekule Structures of Footballene, Journal of Molecular Structure (Theochem), 188 (1989) pp. 55-66							
	AT	Parent, et al., Investigations of Small Carbon Cluster Ion Structures by Reactions with HCN, J. Am. Chem. Soc. 1989, 111, pp. 2393-2401							
EXAMINER <i>[Signature]</i>				DATE CONSIDERED 8/17/92					
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

AR	Lineman, et al., High Mass Carbon Clusters from Aromatic Hydrocarbons Observed by Laser Mass Spectrometry, J. Phys. Chem. 1989, 93, pp. 5025-5026
AS	Clarina, et al., Quantum Chemically Supported Vibrational Analysis of Giant Molecules: The C₆₀ and C₇₀ Clusters, Journal of Molecular Structure (Thechem), 202 (1989), pp. 169-176
AT	Somerville, et al., An astronomical search for the molecule C₆₀, Mon. Not. R. ast. Soc. (1989) 240, Short Communication, pp. 41p-46p

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DATE CONSIDERED

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

561C	AR		Ballester, et al., Atoms in Carbon Cages as a Source of Interstellar Diffuse Lines, The Astrophysical Journal 356 pp. 507-512, June 20, 1990
	AS		Oreasy, et al., Formation of high mass carbon cluster ions from laser ablation of polymers and thin carbon films, J. Chem. Phys. 92(4) February 15, 1990, pp. 2269-2277
	AT		Feld, et al., Carbon Cluster Emission from Polymers under Kiloelectronvolt and Mega-electronvolt Ion Bombardment, J. Phys. Chem. 1990, 94, 4595-4599

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DATE CONSIDERED

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	AP						

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

56-16	AR		Fowler, et al., Electric and Magnetic Properties of the Aromatic Sixty-Carbon Cage, Chemical Physics Letters, Volume 165, number 1, January 5, 1990, pp. 79-86
56-16	AS		Oeulerens, et al., The Jahn-Teller instability of fivefold degenerate states in icosahedral molecules, J. Chem. Phys. 93(2), July 15, 1990, pp. 1221-1234
56-16	AT		Haddon, et al., Icosahedral C ₆₀ Revisited: An Aromatic Molecule with a Vanishingly Small Ring Current Magnetic Susceptibility, Chemical Physics Letters, Vol. 169, No. 4, June 8, 1990, pp. 362-364

EXAMINER

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DATE CONSIDERED

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

5611	AR	Joblin, et al., Detection of diffuse interstellar bands in the infrared, Nature, Vol. 346, August 23, 1990, pp. 729-731
	AS	Amis, et al., On the Lack of Reactivity of Buckminsterfullerene: A Theoretical Study, J. Chem. Soc. Perkin Trans., 1990, pp. 1595-1598
5611	AT	Harano, et al., Decomposition of gaseous hydrocarbons in a laser-induced plasma as a novel carbonaceous source for cluster formation, Chemical Physics Letters, volume 172, number 3,4 September 7, 1990, pp. 219-223

EXAMINER

Shadrach

DATE CONSIDERED

8/17/92

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FORM PTO-1449 (REV. 7-89)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		Sheet 22 of 56	
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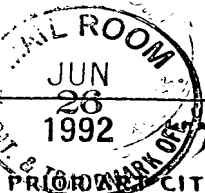
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)		
5615	AR	Yang, et al., Ups of 2-30-Atom Carbon Clusters: Chains and Rings, Chemical Physics Letters, Volume 144, number 5,6, pp. 431-436 3/11/88
5616	AS	Rosen, et al., First-Principle Calculations of the Ionization Potentials and Electron Affinities of the Spheroidal Molecules C ₆₀ and LaC ₆₀ , J. Am. Chem. Soc., 1988, 110, pp. 8701-8703
5617	AT	Brendedal, et al., Normal Coordinate Analysis of "Footballene" C ₆₀ , Spectroscopy Letters, 21(4), 1988, pp. 313-318

EXAMINER <i>Shivibell</i>	DATE CONSIDERED 8/17/92
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

SAR	AR	Brandel, Symmetry Coordinates of Molecular Vibrations of "Footballene" C_{60} , Spectroscopy Letters, 21(4), 1988, pp. 319-339
	AS	Haddon, Measure of Nonplanarity in Conjugated Organic Molecules: Which Structurally-Characterized Molecule Displays the Highest Degree of Pyramidalization?, J. Am. Chem. Soc., 1990, 112, pp. 3385-3389
	AT	Fowler, Carbon Cylinders: A Class of Closed-shell Clusters, J. Chem. Soc. Faraday Trans. 1990, 86(2), pp. 2073-2077

EXAMINER

Shirahata

DATE CONSIDERED

8/17/92

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)							
	AR	jiang, et al., Stability and reactivities based on moment analysis, Theor. Chim. Acta- (1989) 75: pp. 279-297					
SG-K	AS	Ceulemans, et al., SO(4) symmetry and the static Jahn-Teller effect in icosahedral molecules, Physical Review A, Volume 39, Number 2, January 15, 1989, pp. 481-493					
SG-K	AT	Rosen, et al., Calculations of the ionization thresholds and electron affinities of the neutral, positively and negatively charged C ₆₀ -"fullene-60", J. Chem. Phys. 90(4), February 15, 1989, pp. 2525-2526					
EXAMINER <i>Shubert</i>				DATE CONSIDERED <i>8/17/92</i>			
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

	AR		Slanina, et al., On Relative Stability Reasoning for Clusters of Different Dimensions: An
			Illustration with the C₆₀-C₇₀ System, <i>Thermochimica Acta</i>, 140 (1989) pp. 87-95
5610	AS		Campbell, et al., An intense, simple carbon cluster source, <i>J. Chem. Phys.</i> 93(9), November 1, 1990, pp. 6900-6907
5610	AT		Rohlfing, et al., Two-color pyrometric imaging of laser-heated carbon particles in a supersonic flow, <i>Chemical Physics Letters</i> , volume 170, number 1, June 29, 1990, pp. 44-50


EXAMINER

Shelvin

DATE CONSIDERED

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FORM PTO-1449 (REV. 7-80)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTY. DOCKET NO. 7913Z		SERIAL NO. 580,246		Sheet <u>26</u> of <u>56</u>	
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)									
5611	AR			Hale, Discrete-Variational-X alpha Electronic Structure Studies of the Spherical C ₆₀ Cluster: Prediction of Ionization Potential and Electronic Transition Energy, J. Am. Chem. Soc. 1986, 108, pp. 6087-6088					
5611	AS			Satpathy, Electronic Structure of the Truncated-Icosahedral C ₆₀ Cluster, Chemical Physics Letters, volume 130, number 6, October 24, 1986, pp. 545-550					
5615	AT			Rabilizirov, The Role of Cavities and Mantles in the Ultraviolet Extinction Peak of Graphite Spheres with Particular Reference to a Possibly Discovered C ₆₀ Structure, Astrophysics and Space Science 125 (1986), pp. 331-339					
EXAMINER				DATE CONSIDERED					
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

56-11	AR	Cox, et al., C ₆₀ La: A Deflated Soccer Ball?, J. Am. Chem. Soc. 1986, 108, pp. 2457-2458
56-11	AS	Disch, et al., On Symmetrical Clusters of Carbon Atoms: C ₆₀ , Chemical Physics Letters, Volume 125, number 5/6, April 18, 1986, pp. 465-466
56-11	AT	Fowler, et al., 11-Systems in Three Dimensions, Chemical Physics Letters, Volume 127, number 1, May 30, 1986, pp. 78-83

EXAMINER

DATE CONSIDERED

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

56-11	AR	Ozaki, et al., On Electronic States and Bond Lengths of the Truncated Icosahedral C ₆₀
		Molecule, Chemical Physics Letters, Volume 127, number 3, June 13, 1986, pp. 242-244
56-15	AS	Newton, et al., Stability of Buckminsterfullerene and Related Carbon Clusters, J. Am. Chem. Soc., 1986, 108, pp. 2469-2470
56-16	AT	Haddon, et al., Electronic Structure and Bonding in Icosahedral C ₆₀ , Chemical Physics Letters, Volume 125, number 5,6, April 18, 1986, pp. 459-464


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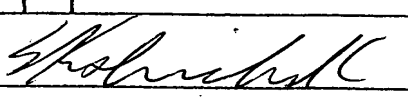
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561C	AR	Haymet, Footballene: A Theoretical Prediction for the Stable, Truncated Icosahedral Molecule C ₆₀ , J. Am. Chem. Soc. 1986, 108, pp. 319-321
561C	AS	Haymet, C ₁₂₀ and C ₆₀ : Archimedean Solids Constructed from sp ² Hybridized Carbon Atoms, Chemical Physics Letters, Volume 122, number 5, December 20, 1985, pp. 421-424
561C	AT	Leger, et al., Identification of the "unidentified IR emission features of interstellar dust?" Astron. Astrophys. 137, (1986), pp. L5-L8

EXAMINER 	DATE CONSIDERED 8/17/92
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

SG-K	AR	Stankevich, et al., The Structural Chemistry of Crystalline Carbon: Geometry, Stability, and Electronic Spectrum, Russian Chemical Reviews, 53(7), 1984, pp. 640-655
SG-K	AS	Klein, et al, Resonance in C ₆₀ Buckminsterfullerene, J. Am. Chem. Soc. 1986, 108, pp. 1301-1302
SG-K	AT	Jelski, et al., Clusters: Link between Molecules and Solids, Journal of Chemical Education, Volume 65, Number 10, October 1988, pp. 879-883

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FORM PTO-101 (REV. 7-90)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTY. DOCKET NO. 7913Z	SHEET 31 of 56 SERIAL NO. 580,246
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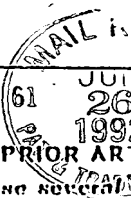
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)									
	AR		Feng, et al., Quantum chemical Investigation of Buckminsterfullerene and Related Carbon Clusters						
			(I): The Electronic Structure and UV Spectra of Buckminsterfullerene, and other C₆₀ Cages, International Journal of Quantum Chemistry, Vol. XXVII, 1990, pp. 509-607						
SGK	AS		Creasy, ... Some model calculations of carbon cluster growth kinetics, J. Chem. Phys.						
			92(12), June 15, 1990, pp. 7223-7233						
	AT		Laszlo, et al., A Study of the UV Spectrum of the Truncated Icosahedral C₆₀ Molecule,						
			Journal of Molecular Structure(Theochem), 183, 1989, pp. 271-278						

EXAMINER <i>Shadrach</i>	DATE CONSIDERED <i>8/17/92</i>
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Sheet 32 of 56

LIST OF PRIOR ART CITED BY APPLICANT

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ATTY. DOCKET NO.

7913Z

SERIAL NO.

580,246

APPLICANT

Donald R. Huffman, et al.

FILING DATE

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U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

56-6	AR	Wu, et al., Vibrational Motions of Buckminsterfullerene, Chemical Physics Letters, Volume 137, number 3, June 12, 1987, pp. 291-294
56-11	AS	Lefevre, An Experimental Study of the Dust of Iron, Carbon, Silicon Carbide and Silica, Astron. & Astrophys. Volume 5, No. 1, 1970 pp. 37-44
56-11	AT	Kroto, et al., The formation of quasi-icosahedral spiral shell carbon particles, Nature, Vol. 331, January 28, 1988, pp. 328-331

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Shelton

DATE CONSIDERED

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FORM PTO-1449
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APPLICANT Donald R. Huffman, et al.	
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

581	AR	Gerhardt, et al., Polyhedral Carbon Ions in Hydrocarbon Flames, Chemical Physics Letters, Volume 137, number 4, June 19, 1987, pp. 306-310
561	AS	Yang, et al., Ups of Buckminsterfullerene and Other Large Clusters of Carbon, Chemical Physics Letters, Volume 139, number 3,4, August 28, 1987 pp. 233-239
	AT	Wilcox, Jr., Extraction with Solvents, Experimental Organic Chemistry, pp. 79-80

EXAMINER <i>[Signature]</i>	DATE CONSIDERED 8/17/92
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Donald R. Huffman, et al.

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	AO							
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

SG 1	AR		Kroto, Space, Stars, C ₆₀ , and Soot, Science, November 25, 1988, pp. 1139-1145
SG 1	AS		Kroto, Giant fullerenes, Chemistry in Britain, January 1990, pp. 40-45
SG 1	AT		Russoletti, et al., Experiments on Cosmic Dust Analogues, Volume 149 Proceedings, pp. 25-42 (1987)

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Sheet 35 of 56

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

	AR	Russoletti, Dusty Objects in the Universe, pp. 89-93
90-1	AS	Vinokur, et al., Measured Extinction Efficiency of Graphite Smoke in the Region 1200-6000A, Nature Physical Science, Vol. 243, May 21, 1973, pp. 50-51
	AT	Hargittai, et al., Quasicrystals, Networks, and Molecules of Fivefold Symmetry, pp. 239-287

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H. Schubert

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

50K	AR	Kroto, The chemistry of the interstellar medium, Phil. Trans. R. Soc. Lond. A 325, 1988, pp. 405-421
	AS	Paquette, Dodecahedranes and Allied Spherical Molecules, Chem. Rev. 1989, pp. 1051-1065
56K	AT	Kaldor, et al., Molecular Surfaces: Chemistry and Physics of Gas Phase Clusters, Microclusters: Proceedings of the First NEC Symposium, 1987, pp. 96-106

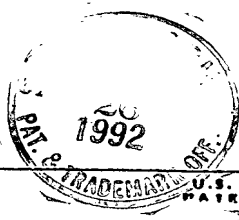
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Donald R. Huffman, et al.

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

5611	AR	Kratschmer, et al., The infrared and ultraviolet absorption spectra of laboratory-produced carbon
		dust: evidence for the presence of the C ₆₀ molecule, Chemical Physics Letters, Volume 170,
		number 2,3, July 6, 1990
	AS	Taylor, et al., Isolation, Separation and Characterisation of the Fullerenes C₆₀ and C₇₀. The
		Third Form of Carbon, J. Chem. Soc., Chem. Commun., 1990
5611	AT	Orl, et al., Probing C ₆₀ , Science, Vol. 242, November 18, 1988, pp. 1017-1022

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W. H. H. H.

DATE CONSIDERED

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	AO													
	AP													

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

56R	AR	Kruto, Chains and Grains in Interstellar Space, Polycyclic Aromatic Hydrocarbons and Astrophysics, pp. 197-206 (1987)
		Shelley, Down to Earth Studies of Carbon Clusters, Carbon in the Galaxy: Studies from Earth and Space, NASA Conference Publication 3061, 1990, 199-244
	AS	Kruto, The Formation and Structure of Circumstellar and Interstellar Dust, Carbon in the Galaxy: Studies from Earth and Space, NASA Conference Publication 3061, pp. 275-284
	AT	

EXAMINER

H. H. H.

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

56-K	AR	Hahn, et al., Magic Numbers in C_N^+ and C_N^- Abundance Distributions, Chemical Physics Letters, Volume 130, number 1,2, September 26, 1986, pp. 12-16
56-K	AS	O'Keefe, et al., Production of Large Carbon Cluster Ions by Laser Vaporization, Chemical Physics Letters, Volume 130, number 1,2, September 26, 1986, pp. 17-19
56-K	AT	Klein, et al., Icosahedral symmetry carbon cage molecules, Nature, Volume 323, October 23, 1986, pp. 703-706

EXAMINER

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

56-K	AR	Stone, et al., Theoretical Studies of Icosahedral C ₆₀ and Some Related Species, Chemical Physics Letters, Volume 128, number 5,6, August 8, 1986, pp. 501-503
56-K	AS	McElvany, et al., Ion-molecule reaction studies of mass selected carbon cluster ions formed by laser vaporization, J. Chem. Phys. 85(1), July 1, 1986, pp. 632-633
56-K	AT	Liu, et al., Negative Carbon Cluster Ion Beams: New Evidence for the Special Nature of C ₆₀ , Chemical Physics Letters, Volume 126, number 2, May 2, 1986, pp. 215-217

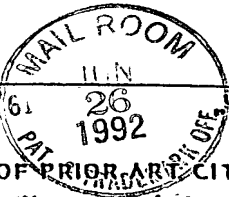
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E. Schindler

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Donald R. Huffman, et al.

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	AO							
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

56-11	AR	Zhang, et al., Reactivity of Large Carbon Clusters: Spheroidal Carbon Shells and their Possible Relevance to the Formation and Morphology of Soot, The Journal of Physical Chemistry, Volume 90, number 4, February 13, 1986, pp. 525-528
56-11	AS	Heath, et al., Lanthanum Complexes of Spheroidal Carbon Shells, J. Am. Chem. Soc., 1985, 107, pp. 7779-7780
56-11	AT	Kroto, et al., C ₆₀ : Buckminsterfullerene, Nature, Vol. 318, November 14, 1985, pp. 162-163

EXAMINER

S. H. Lindell

DATE CONSIDERED

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

50-1C	AR	Bloomfield, et al., Negative and Positive Cluster Ions of Carbon and Silicon, Chemical Physics Letters, Volume 121, number 1,2, November 1, 1985, pp. 33-37
50-1	AS	Rohlfing, et al., Production and characterization of supersonic carbon cluster beams, J. Chem. Phys. 81(7), October 1, 1984, pp. 3322-3330
50-1	AT	Dietz, et al., Laser production of supersonic metal cluster beams, J. Chem. Phys. 74(1), June 1, 1981, pp. 6511-6512

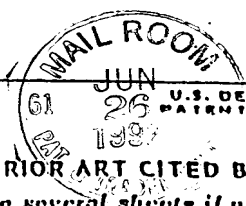
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

SGR	AR	Kroto, C₆₀ fullerenes, giant fullerenes and soot, Pure & Appl. Chem. Vol. 62, No. 3, pp. 407-415, 1990
	AS	Kroto, Giant fullerenes, Chemistry in Britain, January 1990, pp. 40-43
	AT	Waltner, Jr., et al., Carbon Molecules, Ions, and Clusters, Chem. Rev. 1989, 89, pp. 1713-1747

EXAMINER

E. Kalish

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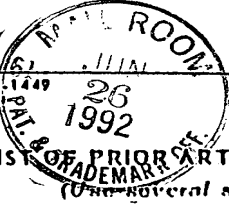
OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

56-11	AR	Kroto, Space, Stars, C_{60} and Soot, Science, Vol. 242, November 25, 1988, pp. 1139-1145
56-12	AS	Kroto, The stability of the fullerenes C_n , with $n = 24, 28, 32, 36, 50, 60$ and 70 , Nature Vol. 329, October 8, 1987, pp. 529-531
	AT	Kratschmer, et al., Search for the UV and IR Spectra of C_{60} in Laboratory-Produced Carbon Dust, Dusty Objects in the Universe, pp. 89-93, 1990

EXAMINER

DATE CONSIDERED

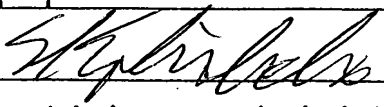
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LIST OF PRIOR ART CITED BY APPLICANT (Use several sheets if necessary)		ATTY. DOCKET NO. 7913Z	SERIAL NO. 580,246
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)			
56C	AR		Rohlfing, Optical emission studies of atomic, molecular, and particulate carbon produced from a laser vaporization cluster source, J. Chem. Phys. 89(1), November 15, 1988, pp. 6103-6112
56C	AS		Creasy, et al., Large Carbon Cluster Ion Formation by Laser Ablation of Polyimide and Graphite, Chemical Physics 126, (1988), pp. 453-468
56C	AT		Gerhardt, et al., Large Ionic Species in Sooting Acetylene and Benzene Flames, AGARD Prc. No. 422, Combustion and Fuels in Gas Turbine Origins, pp. 22-1-22-11 (1988)

EXAMINER 	DATE CONSIDERED 8/17/92
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

56-1C	AR	Gerhardt, et al., The Formation of Polyhedral Carbon Ions in Fuel-Rich Acetylene and Benzene Flames, Twenty-Second Symposium (International) on Combustion/The Combustion Institute, 1988, pp. 395-401
56-1C	AS	Weiss, et al., Photophysics of Metal Complexes of Spheroidal Carbon Shells, J. Am. Chem. Soc., 1988, 110, pp. 4464-4465
56-1C	AT	Rohlfing, High resolution time-of-flight mass spectrometry of carbon and carbonaceous clusters, J. Chem. Phys. 93(11), December 1, 1990, pp. 7851-7662

EXAMINER

G. Holmquist

DATE CONSIDERED

8/17/92

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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U.S. PATENT DOCUMENTS

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	AL						
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	AO						
	AP						

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

	AR	So, et al., First Observation of Carbon Aggregate Ions C_{60}^+ by Laser Desorption Fourier Transform Mass Spectrometry, J. Phys. Chem. 1989, 93, pp. 1184-1187
	AS	Kroto, The role of linear and spherical carbon molecules in interstellar grain formation, Ann. Phys. Fr. 14 (1989) pp. 169-179
	AT	Snow, et al., A search for interstellar and circumstellar C_{60}, Astron. Astrophys. 213, 1989, pp. 291-294

EXAMINER

[Signature]

DATE CONSIDERED

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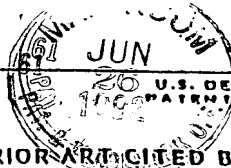
OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

AR	Miller, Buckminsterfullerene - A Molecular Material for the Future?, Adv. Mater. 3, (1991) No. 5, pp. 262-265
AS	Smalley, Supersonic Carbon Cluster Beams, In Atomic and Molecular Clusters, (Elsevier Science 1990) pp. 1-68
AT	Schmalz, et al., C ₆₀ Carbon Cages, Chemical Physics Letters, Volume 130, number 3, October 3, 1986, pp. 203-207

EXAMINER

DATE CONSIDERED

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U.S. PATENT DOCUMENTS

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	AP						

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

56-11	AR	O'Brien, et al., A Reply to "Magic Numbers in C_n^+ and C_n^- Abundance Distributions Based on Experimental Observations, Chemical Physics Letters, Volume 132, number 1, November 28, 1986, pp. 99-102
56-11	AS	Heymann, Buckminsterfullerene, its Siblings, and Soot, Carriers of Trapped Inert Gases in Meteorites?, Proceedings of the Seventeenth Lunar and Planetary Science Conference, Part 1, Journal of Geophysical Research, Vol. 91, No. B13, November 30, 1986, pp. E135-E138
56-11	AT	Heath, The Formation of Long Carbon Chain Molecules during Laser Vaporization of Graphite, J. Am. Chem. Soc. 1987, 109, pp. 359-363

EXAMINER

E. H. Smith

DATE CONSIDERED

8/17/92

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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	AN							
	AO							
	AP							

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

56-11	AR	Heath, et al., Long Carbon Chain Molecules in Circumstellar Shells, The Astrophysical Journal, 314, March 1, 1987, pp. 352-355
56-11	AS	Gausic, et al., Photodissociation of carbon cluster cations, J. Chem. Phys. 86(7), April 1, 1987, pp. 3862- 3869
56-11	AT	McElvany, et al., FIMS Studies of Mass-Selected, Large Cluster Ions Produced by Direct Laser Vaporization, Chemical Physics Letters, Volume 134, number 3, February 27, 1987, pp. 214-219

EXAMINER

[Signature]

DATE CONSIDERED

8/17/92

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	AN							
	AO							
	AP							

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

5611	AR	Cyvin, et al., Molecular Vibrations of Footballene, Chemical Physics Letters, Volume 143, number 4, January 22, 1988, pp. 377-380
5611	AS	Radi, et al., A new method for studying carbon clusters in the gas phase: Observation of size specific neutral fragment loss from metastable reactions of mass selected C_n^+ , $n < 60$, J. Chem. Phys. 88(4), February 15, 1988, pp. 2809-2814
5611	AT	Cox, et al., Carbon clusters revisited: The "special" behavior of C_{60} and large carbon clusters J. Chem. Phys., Vol. 88, No. 3, February 1, 1988, pp. 1588-6907

EXAMINER

Shubert

DATE CONSIDERED

8/17/92

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	AO							
	AP							

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

5611	AR	Yang, et al., Ups of buckminsterfullerene and other Large clusters of Carbon, Chemical Physics Letters, volume 139, number 3,4, August 28, 1987, pp. 233-238
5611	AS	Heath, et al., The UV absorption spectrum of C ₆₀ (buckminsterfullerene): A narrow band at 3860 Å, J. Chem. Phys. 87(7), October 1, 1987, pp. 4236-4238
5611	AT	Kaldor, et al., The basics of molecular surfaces, Chemtech, May 1987, pp. 300-307

EXAMINER

DATE CONSIDERED

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U.S. PATENT DOCUMENTS

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

5611	AR	Iijima, The 60-Carbon Cluster has been Revealed?, J. Phys. Chem. 1987, 91, pp. 3466-3467
5611	AS	Gerhardt, et al., Polyhedral Carbon Ions in Hydrocarbon Flames, Chemical Physical Letters, Volume 137, number 4, June 19, 1987, pp. 306-310
5611	AT	Hollow molecules, New Scientist, November 3, 1966, pp. 118-119

EXAMINER

[Signature]

DATE CONSIDERED

8/17/92

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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U.S. PATENT DOCUMENTS

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	AM							
	AN							
	AO							
	AP							

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

561C	AR	Daniel, Jr., Studies toward a convergent synthesis of C ₆₀ , Dissertation Abstracts International, vol. 49, no. 5, November 1988, p. 1706-B
561C	AS	Keller, BIT Facaz, 1987, 31, 618-623
561C	AT	Kratschmer and No. Sorg, SPECTROSCOPY OF MATRIX-ISOLATED CARBON CLUSTER MOLECULES BETWEEN 200 AND 850 nm WAVELENGTH, Surface-Science 156 (1985)

EXAMINER

814-821

DATE CONSIDERED

8/17/92

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

50-11	AR	Kroto et al., C ₆₀ : Buckminsterfullerene, Nature, Volume 318, November 14, 1985 pp. 162-163
50-11	AS	Kirk-Othmer, Encyclopedia of Chemical Technology, Third Edition, Volume 4, Blood, Coagulants and Anticoagulants to Cardiovascular Agents. pp. 652-653 (478)
50-11	AT	Loffler et al., POLYHEDRAL CARBON IONS IN HYDROCARBON FLAMES, Chemical Physics Letters, Volume 137, number 4, June 19, 1987, pp. 306-310

EXAMINER

[Signature]

DATE CONSIDERED

8/17/92

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APPLICANT

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U.S. PATENT DOCUMENTS

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

SGA	AR	Zhang et al., REACTIVITY OF LARGE CARBON CLUSTERS: SPHEROIDAL CARBON SHELLS THEIR POSSIBLE RELEVANCE TO THE FORMATION AND MORPHOLOGY OF SOOT, The Journal of Physical Chemistry, Volume 90, Number 4, February 13, 1986, pp. 525-528
SGA	AS	Curl et al., FULLERENES, Scientific American, October 1991, pp. 54-64
SGC	AT	Howard et al., Fullerenes C ₆₀ and C ₇₀ IN FLAMES, Letters to Nature, Volume 352, July 11, 1992, pp. 139-141

EXAMINER

E. Schirbel

DATE CONSIDERED

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